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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KIM, HONG CHONG	
ART UNIT	**PAPER NUMBER**
2186	13

DATE MAILED: 01/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/829,355	SRINIVASAN ET AL.	
	Examiner	Art Unit	
	Hong C Kim	2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40 and 42-88* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,16-22,29-32,36,39,40,42,43,45-47,49-51,57-66,69,70,73-79,85 and 86* is/are rejected.

7)☒ Claim(s) *8-15,23-28,33-35,37,38,44,48,52-56,67,68,71,72,80-84,87 and 88* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *8*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Detailed Action

1. Claims 1-40 and 42-88 are presented for examination. This office action is in response to the amendment filed on 10/10/03.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 1, 2, 6, 7, 16, 29-32, 36, 39-41, 51, 57, 60, 61, 73, 74, 85, and 86 are rejected under 35 U.S.C. 102(b) as being anticipated by Feldmeier US Patent No. 5,920,886.

As to claim 1, Feldmeier discloses the invention as claimed. Feldmeier discloses a CAM system including an array of binary CAM cells segmented into a plurality of array groups (Fig. 10A), each array group having a group global mask for storing a mask pattern indicating priority of the array group (col. 7 lines 31-45 and col. 8 lines 8-10).

As to claim 2, Feldmeier further discloses wherein two or more array groups have the same priority (col. 11 line 31 and col. 8 lines 3-5, multiple matching entries reads on this limitation).

As to claim 6, Feldmeier further discloses means for selectively comparing a search key with data stored in the array groups according to priority (Fig. 10B).

As to claim 7, Feldmeier further discloses means for receiving a priority for the search key and means for comparing the search key with data stored only in the array groups that have the same priority as the search key (Fig. 10B).

As to claim 16, Feldmeier further discloses means for storing data in the array groups according to priority (Fig. 10B).

As to claim 29, Feldmeier discloses the invention as claimed. Feldmeier discloses a CAM system including an array of binary CAM cells segmented into a plurality of array groups (Fig. 10B), each array group assigned a priority (col. 7 lines 31-45 and col. 8 lines 8-10), and a table (col. 8 lines 8-10, the list) having a plurality of rows, each storing the priority of a corresponding array group.

As to claim 30, Feldmeier further discloses wherein two or more array groups have the same priority (col. 11 line 31 and col. 8 lines 3-5, multiple matching entries reads on this limitation).

As to claim 31, Feldmeier further discloses each array group includes a group global register for storing a global mask pattern indicative of the priority of the array group (col. 7 lines 31-45 and col. 8 lines 8-10).

As to claim 32, Feldmeier further discloses means for selectively storing a search key with data stored in the array groups according to priority to generate a highest priority match index (Fig. 10B).

As to claim 36, Feldmeier further discloses means for comparing a search key with data storing the array groups according to priority (Fig. 10B).

As to claim 39, Feldmeier discloses the invention as claimed. Feldmeier discloses a method of operating a CAM system including an array of binary CAM cells segmented into a plurality of array groups (Fig. 10B) comprising, assigning a priority to one or more array groups and selectively storing data in the array groups according to priority, wherein assigning the priority comprises: for each array group, storing a mask pattern indicative of the priority assigned

to the array group in a global mask for the array group (col. 7 lines 31-45 and col. 8 lines 8-10).

As to claim 40, Feldmeier further discloses wherein two or more array groups have the same priority (col. 11 line 31 and col. 8 lines 3-5, multiple matching entries reads on this limitation).

As to claim 41, Feldmeier further discloses a mask pattern (col. 7 lines 31-45 and col. 8 lines 8-10).

As to claim 51, Feldmeier further discloses selectively comparing a search key with data stored in the array groups according to priority (Fig. 10B).

As to claim 57, Feldmeier further discloses storing the priority for each array group in a priority table (col. 8 lines 8-10, the list).

As to claim 60, Feldmeier discloses a CAM comprising: plurality of CAM array groups each including a plurality of rows of binary CAM cells (Fig. 10B) and a plurality of group global mask circuits each coupled to a corresponding one of the CAM array groups and each for storing global mask for masking one or more bits in all of the rows of CAM cells for the corresponding CAM array group, wherein each group global mask indicates a priority of the corresponding

CAM cells relative to other CAM cells (col. 7 lines 31-45 and col. 8 lines 8-10).

As to claim 61, Feldmeier discloses the invention as claimed. Feldmeier further discloses the priority assigned to each CAM array group is unrelated to the CAM array group's location relative to other CAM array groups (col. 7 lines 31-45 and col. 8 lines 8-10, multiple match reads on this limitation).

As to claim 73, Feldmeier discloses a CAM comprising: a plurality of CAM array groups (Fig. 10B) and means for assigning a first priority to a first and second of the CAM array groups (col. 8 lines 24+, multiple matching reads on this limitation) and assigning a second priority to a third of the CAM array groups wherein the first and second priorities are different and wherein the third Cam array group occupies an address space numerically between address spaces occupied by the first and second CAM array groups (Fig. 6B, entry 1 is between entry 0,2,3 and col. 8 lines 44+) .

As to claim 74, Feldmeier further discloses means for storing data in the CAM array groups according to priority (col. 14 lines 32-34).

As to claim 85, Feldmeier discloses a CAM comprising: plurality of CAM array groups each including a plurality of rows of binary CAM cells (Fig. 10B); a plurality of group global

mask (col. 7 lines 32+ and Fig. 6A) and an index circuit (Fig. 10B).

As to claim 86, Feldmeier further discloses a select circuit and a priority encoder (Fig. 10B).

Alternatively claims 1, 2, 6, 7, 16, 29-32, 36, 39-41, 51, 57, 60, 61, 73, 74, 85, and 86 are rejected under 35 U.S.C. 102(e) as being anticipated by Ross et al. (Ross) US Patent No. 6,389,506.

As to claim 1, Ross discloses the invention as claimed. Ross discloses a CAM system including an array of binary CAM cells segmented into a plurality of array groups (abstract), each array group having a group global mask for storing a mask pattern indicating priority of the array group (abstract, mask).

As to claim 2, Ross further discloses wherein two or more array groups have the same priority (col.3 line 25 one or more matching entries reads on this limitation).

As to claim 6, Ross further discloses means for selectively comparing a search key with data stored in the array groups according to priority (Fig. 3 Ref. 313).

As to claim 7, Ross further discloses means for receiving a priority for the search key and

means for comparing the search key with data stored only in the array groups that have the same priority as the search key (Fig. 3 Ref. 313).

As to claim 16, Ross further discloses means for storing data in the array groups according to priority (abstract).

As to claim 29, Ross discloses the invention as claimed. Ross discloses a CAM system including an array of binary CAM cells segmented into a plurality of array groups (abstract), each array group assigned a priority (abstract mask), and a table having a plurality of rows, each storing the priority of a corresponding array group (abstract).

As to claim 30, Ross further discloses wherein two or more array groups have the same priority (col.3 line 25 one or more matching entries reads on this limitation).

As to claim 31, Ross further discloses each array group includes a group global register for storing a global mask pattern indicative of the priority of the array group (abstract).

As to claim 32, Ross further discloses means for selectively storing a search key with data stored in the array groups according to priority to generate a highest priority match index (abstract and Fig. 3).

As to claim 36, Ross further discloses means for comparing a search key with data storing the array groups according to priority (abstract).

As to claim 39, Ross discloses the invention as claimed. Ross discloses a method of operating a CAM system including an array of binary CAM cells segmented into a plurality of array groups (abstract) comprising, assigning a priority to one or more array groups and selectively storing data in the array groups according to priority, wherein assigning the priority comprises: for each array group, storing a mask pattern indicative of the priority assigned to the array group in a global mask for the array group (abstract).

As to claim 40, Ross further discloses wherein two or more array groups have the same priority (col.3 line 25 one or more matching entries reads on this limitation).

As to claim 41, Ross further discloses a mask pattern (abstract).

As to claim 51, Ross further discloses selectively comparing a search key with data stored in the array groups according to priority (abstract, mask).

As to claim 57, Ross further discloses storing the priority for each array group in a priority table (abstract).

As to claim 60, Ross discloses a CAM comprising: plurality of CAM array groups each including a plurality of rows of binary CAM cells (abstract) and a plurality of group global mask circuits each coupled to a corresponding one of the CAM array groups and each for storing global mask for masking one or more bits in all of the rows of CAM cells for the corresponding CAM array group, wherein each group global mask indicates a priority of the corresponding CAM cells relative to other CAM cells (abstract).

As to claim 61, Ross discloses the invention as claimed. Ross further discloses the priority assigned to each CAM array group is unrelated to the CAM array group's location relative to other CAM array groups (col.3 line 25 one or more matching entries reads on this limitation).

As to claim 73, Ross discloses a CAM comprising: a plurality of CAM array groups (abstract) and means for assigning a first priority to a first and second of the CAM array groups (col.3 line 25 one or more matching entries reads on this limitation) and assigning a second priority to a third of the CAM array groups wherein the first and second priorities are different and wherein the third Cam array group occupies an address space numerically between address spaces occupied by the first and second CAM array groups (abstract and col.3 line 25 one or more matching entries reads on this limitation).

As to claim 74, Ross further discloses means for storing data in the CAM array groups according to priority (abstract, mask).

As to claim 85, Ross discloses a CAM comprising: plurality of CAM array groups each including a plurality of rows of binary CAM cells (abstract); a plurality of group global mask (abstract, mask) and an index circuit (Fig. 1).

As to claim 86, Ross further discloses a select circuit and a priority encoder (Fig. 1). 10B).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3-5, 17-22, 58, 59, 42, 43, 49, 50, 62-66, 69, 70, and 75-79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldmeier US Patent No. 5,920,886 or Ross et al. (Ross) US Patent No. 6,389,506 in view of Feldmeier et al. ('414) US Patent No. 6,289,414.

As to claim 3, Feldmeier or Ross discloses the invention as claimed, however, neither

Feldmeier nor Ross specifically discloses a CIDR address. '414 discloses a CIDR address (col. 6 lines 9+ and col. 9 lines 8-27) for the purpose of providing advantage of reducing address table size (col. 6 lines 14-16).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate a CIDR address of 414 in the teaching of Feldmeier Or Ross thereby results in an invention as claimed.

As to claim 4, '414 further discloses an index of the longest prefix (col. 6 lines 9+ and col. 9 lines 8-27).

As to claim 5, '414 further discloses means for storing data in the array groups according to prefix (col. 6 lines 9+ and col. 9 lines 8-27 and Figs. 7-9).

As to claim 17, '414 further discloses a next free address (col. 9 lines 25-27).

As to claim 18, Feldmeier further discloses an address decoder (col. 11 lines Fig. 2 Step 2).

As to claim 19, '414 further discloses an NFA table (col. 9 lines 25-27).

As to claim 20, '414 further discloses empty bit (col. 2 lines 53-57).

As to claim 21, '414 further discloses an index circuit to generate a next free address (col. 9 lines 25-27).

As to claim 22, '414 further discloses valid bits (col. 2 lines 53-57). Feldmeier further discloses a priority encoder (Fig. 10B Ref. 1060).

As to claims 58 and 59, '414 further discloses valid bits (col. 2 lines 53-57).

As to claim 42, '414 further discloses a next free address (col. 9 lines 25-27).

As to claim 43, '414 further discloses generating an NFA for each priority, storing the NFA, selecting a row of the NFA table using the priority, accessing the NFA (col. 9 lines 25-27 and Figs. 3, 9, and 24).

As to claim 49, '414 further discloses a CIDR address (col. 6 lines 9+ and col. 9 lines 8-27).

As to claim 50, '414 further discloses an index of the longest prefix (col. 6 lines 9+ and

col. 9 lines 8-27).

As to claims 62 and 63, '414 further discloses valid bits (col. 2 lines 53-57).

As to claim 64, '414 further discloses a CIDR address (col. 6 lines 9+ and col. 9 lines 8-27).

As to claim 65, '414 further discloses an index circuit to generate a next free address (col. 9 lines 25-27).

As to claim 66, Feldmeier further discloses a select circuit and a priority encoder (Fig. 10B).

As to claim 69, '414 further discloses an index circuit to generate a next free address (col. 9 lines 25-27).

As to claim 70, Feldmeier further discloses a select circuit and a priority encoder (Fig. 10B).

As to claims 75, 77, and 79, '414 further discloses an index circuit to generate a next free

address (col. 9 lines 25-27).

As to claim 76, Feldmeier further discloses a address decoder (Fig. 10B).

As to claim 78, '414 further discloses empty bit (col. 2 lines 53-57).

Allowable Subject Matter

6. Claims 8-15, 23-28, 33-35, 37-38, 44-48, 52-56, 67-68, 71-72, 80-84 and 87-88 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Amendment

7. Applicant's arguments filed on 10/10/03 have been fully considered but they are not deemed to be persuasive.

Applicant's remarks that the references not teaching a group global mask is not considered persuasive. Feldmeier discloses a group global mask (col. 7 lines 32+, each entry having a priority mask reads on this limitation). Ross also discloses a group global mask (abstract). Therefore broadly written claims are disclosed by the references cited.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. ~~See attached PTO-892~~.

9. a shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) days from the mail date of this letter. Failure to respond within the period for response will result in **ABANDONMENT** of the application (see 35 USC 133, MPEP 710.02, 710.02(b)).

10. Applicants are requested to number each line of each claim starting with line number one to provide easier communication in the future.

11. When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. § 1.111(c).

12. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

13. Any inquiry concerning this communication or earlier communications from the

Examiner should be directed to Hong Kim whose telephone number is (703) 305-3835. The Examiner can normally be reached on the weekdays from 8:30 AM to 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Matt Kim, can be reached on (703) 305-3821.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

14. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to TC-2100:
(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

HK
Primary Patent Examiner
January 8, 2004